

CLAIMS

1. A method of condensing an unprocessed well stream from an offshore gas or gas condensate field, wherein the well stream is fed from one or more wellheads (1) through a cooling loop (3) in the sea to be cooled by the surrounding water to a temperature just above the hydrate temperature of the well stream, and then feeding the cooled well stream to an expander (4) for the expansion thereof,
the method being characterized in that the unprocessed well stream is expanded isentropically, or near isentropically, to a state in which the pressure is close to that of a storage tank (7), such that part of the well stream is condensed, and condensed fractions (5A) of the prior to the expansion, unprocessed well stream are drawn off the expander and fed to the storage tank along with condensation products (5B) from the exit of the expander, thereby producing, without any preprocessing, a condensed well stream product made up of a mixture of liquids and solids (LUWS) which is collected in the storage tank (7) for transport therefrom to land.
2. A method according to claim 1, wherein the condensation products from the exit of the expander is cooled to a desired temperature prior to being fed to the storage tank (7), by means of a heat exchanger (8) and cooling device (9).
3. A method according to claim 2, wherein energy generated in the expander (4) by direct condensation therein of part of the well stream, is utilized in the cooling device (9).
4. A method according to claim 2, wherein the cooling device takes the form of a cooling energy accumulator (9) adapted to be recharged at another location and transported to production site.
5. A method according to claim 1, wherein the storage tank pressure is set between 10 and 20 bar.
6. A method according to claim 1, wherein the storage tank pressure is set close to atmospheric pressure.
7. A method according to claim 1, wherein the expander (4) is made up of a combination a static and a dynamic expander, the latter having one or more stages.

8. A system for carrying out the method according to any one of the claims above, the system comprising:

- an expander (4) in which the expansion of the unprocessed well stream is effected isentropically, or near isentropically, to a state in which the pressure is close to that of a storage tank (7), the expander being provided with a plurality of draining outlets (5A),
- a heat exchanger (8) for the receipt of condensation products (5B) from the exit of the expander,
- a mixing vessel (6) for the receipt of condensed fractions of the well stream taken from the expander through its draining outlets and for the receipt of condensation products which have passed through the heat exchanger,
- a storage tank (7) for storing a mixture of liquids and solids (LUWS) received from the mixing tank, for transport therefrom to land.

15 9. A system according to claim 8, further comprising a cooling device (9) associated with the heat exchanger (8), and where energy generated in the expander (4) by direct condensation therein of part of the well stream, is utilized in the cooling device (9).

10. A system according to claim 9, wherein the cooling device (9) takes the form of a 20 cooling energy accumulator adapted to be recharged ashore and transported to the offshore production field.